NATIONAL LIBRARY OF MEDICINE
NEWS

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New Exhibit in NLM Lobby

THE RNA GENETIC CODE

UUU	PHE	UCU	SER	UAU	TYR	UGU	CYS
UUC		UCC		UAC		UGC	
UUA	LEU	UCA		UAA	TERM	UGA	TERM
UUG		UCG		UAG		UGG	TRP
CUU	LEU	CCU	PRO	CAU	HIS	CGU	ARG
CUC		CCC		CAC		CGC	
CUA		CCA		CAA	GLN	CGA	
CUG		CCG		CAG		CGG	
AUU	ILE	ACU	THR	AAU	ASN	AGU	SER
AUC		ACC		AAC		AGC	
AUA		ACA		AAA	LYS	AGA	ARG
AUG	MET	ACG		AAG		AGG	
GUU	VAL	GCU	ALA	GAU	ASP	GGU	GLY
GUC		GCC		GAC		GGC	
GUA		GCA		GAA	GLU	GGA	
GUG		GCG		GAG		GGG	

"The Genetic Code...and How It Works" is the theme of the new exhibit which opened at the National Library of Medicine on March 25th.

The exhibit centers around the work of Nobel Laureate, Dr. Marshall W. Nirenberg of the National Institutes of Health, the first Federal scientist to be awarded the Nobel Prize. Dr. Nirenberg shared the award last year with Dr. H. Gobind Khorana of the University of Wisconsin and Dr. Robert W. Holley of the Salk Institute for Biological Studies in California for their "discoveries concerning the interpretation of the genetic code and its function in protein synthesis."

Excerpts from notebooks and papers relating to early experiments by Dr. Nirenberg and his associates which defined the relationship of nucleotide bases amino acids are displayed.

Also on display in the lobby of the Library is the citation which was awarded to Dr. Nirenberg in Stockholm by the King of Sweden on December 10, 1968.

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AAMC - NLM Hold Biomedical Education Communications Conference

Members of the Association of American Medical Colleges and NLM representatives met at the National Library of Medicine, February 25-26, to explore the potentialities of a national communications network for biomedical education.

Specific objectives of the two day conference were to inform a selected group of medical educators of the potentialities of a biomedical communications network; to estimate what aids are needed to strengthen both the process and the content of medical teaching as well as to enhance the depth, scope and efficiency of medical teaching; to take the first steps to assess materials and experiences already available and to consider methods of educating the medical teaching community in the uses and manipulation of such a network once it is created. Speakers included Dr. Cheves McC. Smythe, Associate Director, AAMC; Dr. Ruth M. Davis, Director, Lister Hill National Center for Biomedical Communications, NLM; Dr. William N. Hubbard, Jr., Dean, University of Michigan Medical School; Dr. Daniel H. Funkenstein,

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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NATIONAL LIBRARY OF MEDICINE
NEWS

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8600 Rockville Pike, Bethesda, Maryland 20014

UCLA and New York Academy of Medicine Named Regional Medical Libraries

Establishment of two more regional medical libraries, in New York and in California, has been announced at the National Library of Medicine. Two grants, in the amount of $150,000 each, were made under the authority of the Medical Library Assistance Act of 1965. They were awarded to the New York Academy of Medicine in New York City, and to the University of California at Los Angeles (UCLA) Biomedical Library Center for the Health Sciences.

The two awards will initiate regional library services for health professionals in New York State and the 11 northern counties of New Jersey, and in the Pacific Southwest Region, including the states of California, Nevada, Arizona and Hawaii.

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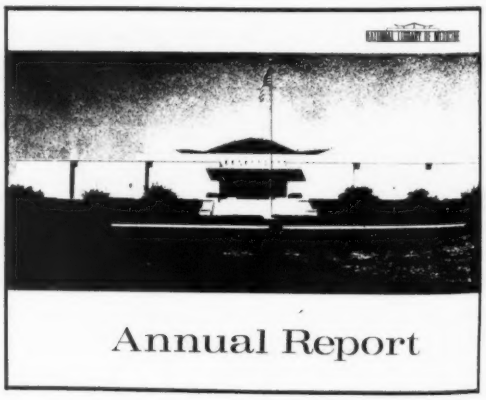
NLM Annual Report For Fiscal Year 1968

The Annual Report of the National Library of Medicine for Fiscal Year 1968 lists the following new developments for the fiscal year, within the Library: the development of a national biomedical communications network, a toxicological information system, the application of audiovisual media to medical education, a second generation of MEDLARS, and a comprehensive Federal support program to strengthen and modernize medical libraries and information processing and delivery systems.

In his introduction to the Annual Report, Dr. Martin M. Cummings, Director of NLM, referred to these new developments as "the modern equivalents of earlier innovations: the Index Medicus, the Index Catalog, inter-library lending, the substitution of photocopy for interlibrary loans and the first MEDLARS."



He said that the classic problems to which the Library addresses itself "are far from solved. Instead, they have been magnified in their significance to the country through their identification with major national objectives of medical education and research.

"Nor can the Library, or any library, be complacent about its accomplishments. To remain vital we must always strive to improve."

Single copies of the Library's Annual Report for fiscal year 1968 are available on request from the Public Information Office, National Library of Medicine, 8600 Rockville Pike, Bethesda, Maryland 20014.

Exhibit (Continued from Page 1)

A three-dimensional hemoglobin model, constructed by Dr. Makio Murayama of the National Institutes of Health is part of the display along with color photographs delineating the replication of the DNA (deoxyribonucleic acid) molecule. Short film clips to illustrate how the code works are available.

A three dimensional DNA model constructed especially for the National Library of Medicine by Mr. A. A. Barker in Cambridge, England highlights the exhibit. It is fifteen feet high and two feet in diameter. Plastic balls of different sizes represent hydrogen, oxygen, nitrogen, carbon and phosphorus, the only atomic constituents of these enormous molecules. The double helix is constructed around a stainless steel tube.

The code is contained in the deoxyribonucleic acid (DNA), an important constituent in the nucleus of each cell. The exact mechanism by which the cell uses that part of the code most important to its structure and function is not clear. Nevertheless, enough is known from the study of bacterial forms to indicate that the information is transferred from nucleus to cytoplasm by a different compound, messenger ribonucleic acid (RNA), that causes a third compound transfer RNA to select the specific building blocks and direct the cell's machinery to produce the precise protein of immediate utility.

The code consists of triple sequences of five comparatively simple chemicals which in the combinations of 64 different arrangements can produce all of the extremely large numbers of different proteins found in living forms.

The genetic code is also responsible for transmission of information from generation to generation, and subtle changes in its information content are probably responsible for evolution.

Dr. Nirenberg provided much of the material that went into the exhibit. Dr. W. French Anderson and Dr. Philip Leder, also of the National Heart Institute, worked with Dr. Nirenberg during his studies on the genetic code; they, too, provided material for the exhibit.

Dr. Makio Murayama, of NIH's National Institute of Arthritis and Metabolic Diseases, made the model of hemoglobin. The model of the codons was constructed by Dr. Herbert Jehle, Professor of Physics at the George Washington University.

The DNA film was produced by Mr. Mallory Pearce for his master's degree at UCLA and is distributed by John Wiley of New York, who with Mr. Sy Wexler of Wexler Film Productions, Los Angeles, provided excerpts in 8 mm cartridge format. Color pictures of DNA models were obtained from Life Magazine, and the large model of a piece of DNA was made by Mr. A. A. Barker of Cambridge, England.

The exhibit is open to the public from March 25th through June 27th during the Library's regular hours: Monday through Friday, 8:30 a.m. - 9:00 p.m.; Saturday, 8:30 a.m. - 5:00 p.m.

Conference (Continued from Page 1)

Professor of Psychiatry, Harvard Medical School; Dr. Lawrence L. Weed, Associate Professor of Microbiology, Case Western Reserve University School of Medicine and Dr. Jack W. Cole, Professor of Surgery, Yale University School of Medicine.

A panel discussion reviewed "Factors Affecting Student and/or Faculty Acceptance or Resistance of Externally Designed Teaching Resources," chaired by Dr. George E. Miller, Director, Office of Research in Medical Education, University of Illinois School of Medicine, and including Dr. William Cooper, Professor of Anatomy, University of Colorado School of Medicine and Dr. Robert B. Livingston, Chairman, Department of Neurosciences, University of California, San Diego School of Medicine. Summation and conclusions were presented by Dr. Thomas D. Kinney, Professor of Pathology, Duke University School of Medicine.

Dr. Martin M. Cummings, Director of the National Library of Medicine, told the members attending the conference in his welcoming address that to achieve an efficient and reliable library system which can provide services to listeners and viewers "as we now service readers will require new types of parietal arrangements within our educational institutions."

Speaking to the group in the Billings Auditorium, Dr. Cummings said that "more importantly it will also require changes in the attitudes of educators and librarians to accept and manage these new informational forms with the same care and diligence that we apply to the bibliographic apparatus of the printed record.

"Stimulated by Archibald Macleish's description of a librarian in 1956 as 'trustee of the printed record of his civilization,' I offer this comment to all who share this awesome task. We are no longer stewards of knowledge in printed form alone. We now face the enormous problem of acquiring, preserving, and disseminating knowledge in many forms, especially information in audio and audiovisual modes.

"Many of us are not satisfied with the speed and quality of modern library services in a world which has become supersaturated with published information. Dr. John Shaw Billings, the first Director of NLM, realized this more than a half century ago when he said, 'if neither the librarian nor the readers are dissatisfied, the Library is probably dying, or dead.' In a country which is producing a technologic revolution, this communications deficit represents a prime paradox. I believe that the community of science and technology which generates the information overload should be capable of devising means to manage and utilize it."

Dr. Cummings added, "Today we are asking medical educators what they foresee as future needs in applying new technologies for assistance to the educational and learning process. Tomorrow we will be faced with the problems of implementing systems to deliver these substantive informational packages to thousands of persons, especially students, who hopefully will use them. In my view this is the essence of the problems to be considered at this and future conferences."

Highlights From HMD Print Collection

The History of Medicine Division has a collection of pictorial materials which includes portraits of medical men and representations of medicine throughout history to the present day. Melencolia I, an engraving by Albrecht Dürer (1471-1528) executed in 1514, is from this collection.

This engraving is a fusion of classical, medieval, and humanistic ideas of melancholy. In it Dürer attempted to express individual emotions and also to develop a universal symbol. The pervading mood of the engraving is one of gloom, disorder, and a hiatus in activity. However, Melencolia is not simply a slothful, lethargic type that, during the Middle Ages, was depicted as the example of black bile's influence. The gaze of Dürer's lady is one that reflects contemplation, not drowsiness.

The revival of classicism, especially the Neo-Platonic re-evaluation of Aristotelian concepts of melancholy and Saturn's influence as often beneficial and desirable, influenced Melencolia I. The many instruments of measurement and building are symbols of Saturn's dominion in these realms, particularly geometry. The wreath and wings depict an exalted melancholy. Other attributes such as the dog, the bat (holding the title), the shadowed face, the keys(power), and purse (riches) are traditional in the representation of melancholy. The wreath denotes an elevated status but is made of water plants as a palliative for the humor's dryness. The magic square of Jupiter is a counter-influence to the evils of Saturn. The purse and keys represent not simply power and riches, but power as achievement of full capacity in art and riches as a legitimate, just reward.

Dürer's winged figure, as a symbol of theory and knowledge, is unable to fly, but is bound to the earth in her state of conscious thought and suffering and realization that she cannot achieve perfection. The unconscious suffering of the dog and the unselfconscious, busy activity of the putto serve as contrasts. The putto represents practice without theory. The separation of the two creates the vacuum depicted in the engraving. Dürer himself was frustrated at his inability to produce perfect beauty with a thorough knowledge of mathematical principles. Divine inspiration was needed. Even with inspiration and knowledge one can only approach the ideal, thus frustration results.

The I is a reference to Agrippa von Nettesheim's interpretation of melancholy affecting the rational and spiritual minds as well as the imaginative mind of the melancholic humor. Dürer's engraving is melancholy of the imaginative mind. This is not the inevitable mental unbalance of medieval melancholy; it is the melancholy of a creative being reaching out for unattainable ideals. As a medical case, Dürer's interpretation of melancholy most closely resembles modern psychiatric problems such as depression and nervous breakdown derived from the frustration of individuals who envision perfection in their world, but within their limitations as humans are unable to achieve it.

Second Annual Orientation for Medical Library Personnel

The second annual orientation to the National Library of Medicine was held in the Billings Auditorium of NLM, March 17 - 19 for some 50 representatives of nine medical libraries and library schools throughout the country. Institutions represented included the Welch Medical Library of John Hopkins University, University of Tennessee Medical Units, Washington University School of Medicine Library, Wayne State University Medical Library, University of California at Los Angeles Biomedical Library, Case Western Reserve University School of Library Science, University of Chicago Graduate Library School, University of California Institute of Library Research and the University of Minnesota Library School.

The group was welcomed by the Director, NLM. Miss Carol E. Long, NLM Training Officer, outlined the program of instruction. Speakers during the three days included: Mr. Samuel T. Waters, Deputy Director, Library Operations, who described the Library network; Dr. John B. Blake, Chief, History of Medicine Division; Dr. Charles N. Rice, Associate Director, Specialized Information Services; Miss Winifred Sewell, Drug Literature Program; Mr. Ralph Simmons, Lister Hill National Center for Biomedical Communications and Mr. Alfred Asch, Chief, Office of Computer and Engineering Services, who discussed MEDLARS II. Mr. Albert M. Berkowitz, Chief, Loan and Stack Section, discussed Interlibrary Loans. Mr. William H. Caldwell, Deputy Chief, Bibliographic Services Division, and Dr. Raquel S. Halegua, Scientific Editor, Library Operations, presented a special MEDLARS orientation. Mr. William I. Plank and Mrs. Catherine E. Orner spoke on computer cataloguing and included a special terminal demonstration. Mr. Herbert H. Fockler described the NLM Extramural Programs.

UCLA (Continued from Page 2)

The UCLA Biomedical Library, under the direction of Miss Louise Darling, Librarian, will be assisted by a 19 man advisory committee. The library also will have a subcontract for interlibrary loan assistance to Northern California and Nevada with the University of California Medical Center Library in San Francisco.

The New York Academy of Medicine, located at 2 East 103rd Street, New York, N.Y. 10029, under the direction of Dr. James E. McCormack, Director of the Academy, will serve as the administrative unit for the New York Regional Medical Library.

The Regional Medical Library Operation will improve the flow of biomedical information through local medical libraries to medical practitioners, researchers, and educators throughout the New York Region, (New York and the 11 northern counties of New Jersey), and the Pacific Southwest Region (California, Nevada, Arizona and Hawaii). The main goal of the new library service is to provide the most effective delivery of health science information to members of the health professions of the regions. Operation of the new service in the two new regions is scheduled to begin this year.

The first Regional Medical Library, serving the New England region, was established at the Francis A. Countway Library, Boston. The Mid-Eastern Regional Medical Library was established at the College of Physicians of Philadelphia; the Pacific Northwest Regional Medical Library at the health Sciences Library of the University of Washington, Seattle; the Midwest Regional Medical Library at the John Crerar Library, Chicago, and the East Central Regional Medical Library at Wayne State University, Detroit. By 1970 there will be 10 to 12 Regional Medical Libraries in operation.

Latest Price List for NLM Publications

The following NLM publications are available at the prices quoted from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. Remittance should be included with the order in the form of check, money order, or Superintendent of Documents coupons. Orders for non-subscription publications should contain catalog numbers for speed in handling.

INDEX MEDICUS (Volume 10, 1969): $63 annual subscription, including Medical Subject Headings ($78.75 foreign); single issues, $5.00.

CUMULATED INDEX MEDICUS (Volume 9, 1968): $72.25 ($80.55 foreign) per five volume set. Cat. No. FS 2.208/4:9

MEDICAL SUBJECT HEADINGS (1969): $3. Cat. No. FS 2.208/2: Vol. 10, No. 1, Pt. 2

LIST OF JOURNALS INDEXED IN INDEX MEDICUS (1969): $1.25. Cat. No. FS 2.208/3:969

MONTHLY BIBLIOGRAPHY OF MEDICAL REVIEWS (Volume 2, 1969): $2.25.

NATIONAL LIBRARY OF MEDICINE CURRENT CATALOG:
A) biweekly issues only--$13 ($17 foreign);
B) quarterly issues only, including casebound annual--$30 ($37.50 foreign);
C) annual cumulation only (1968)--$14.25 (Cat. No. FS 2.216:2/968).

NATIONAL MEDICAL AUDIOVISUAL CENTER CATALOG (1968): $0.75. Cat. No. FS 2.36/2:968

FILM REFERENCE GUIDE FOR MEDICINE AND ALLIED SCIENCES (1968): $2.75. Cat. No. FS 2.211:968

TOXICITY BIBLIOGRAPHY (1969): $14 ($17.50 foreign); single issues, $3.50.

RUSSIAN DRUG INDEX (1967): $2.25. Cat. No. FS 2.202:R92/2/967

A CATALOG OF SIXTEENTH CENTURY PRINTED BOOKS IN THE NATIONAL LIBRARY OF MEDICINE: (1967) $5.25. Cat. No. FS 2.209:Si 9

BIBLIOGRAPHY OF THE HISTORY OF MEDICINE (Number 3, 1967): $2.75. Cat. No. FS 2.209/4.3

PRINTS RELATING TO DENTISTRY (1967): $0.50. Cat. No. FS 2.202:D43

MEDLARS: 1963-1967 (1968): $0.75. Cat. No. FS 2.202:M46/3

For further information regarding these and other NLM publications, see the inside front cover of any recent issue of Index Medicus or Monthly Bibliography of Medical Reviews.

New Publications

The publication listed below was prepared to guide NLM indexers in the problem areas of parasitology. Intended primarily as a reference tool for internal use, the booklet may also be of interest to users of publications processed by MEDLARS (Medical Literature Analysis and Retrieval System). A limited number of copies are available without cost from the Index Section, National Library of Medicine, 8600 Rockville Pike, Bethesda, Maryland 20014.

PARASITOLOGY Indexing Instructions, prepared by Thelma Charen of NLM's Index Section.

New NLM Literature Searches

Single copies of the following new bibliographies are available on request from the Office of Public Information, National Library of Medicine, 8600 Rockville Pike, Bethesda, Maryland 20014. They should be ordered by number. Please do not send requests on interlibrary loan forms.

L.S. No.	Title
1-69	Psychotherapy in alcoholism. January 1964-August 1968. (160 citations).
2-69	Psychotherapy in drug addiction or abuse. January 1964-August 1968. (50 citations)
3-69	Psychotropic drug addiction or withdrawal symptoms in man. January 1964-August 1968. (207 citations)
4-69	Cannabis toxicology. January 1964-August 1968. (55 citations)
5-69	Heart transplantation in man. January 1964-August 1968. (180 citations)
6-69	Kidney transplantation in man. January 1964-June 1968. (651 citations)
7-69	Progestational or estrogenic hormones and human lipid metabolism. January 1964-August 1968. (51 citations)
8-69	Programs for rehabilitation of the aged. January 1964-August 1968. (115 citations)

Searching the Neoplastic Literature

The Library's Reference Services Division has published a 28-page manual entitled, Searching the Neoplastic Literature, A Guide to Selected Reference Tools and Other Publications. This compilation by Virginia MacDonald, a member of the Reference Section staff, cites primarily English language reference works and covers the period 1950-1967. A limited number of copies are available without charge from: Reference Services Division, Reference Section, National Library of Medicine, 8600 Rockville Pike, Bethesda, Maryland 20014.

New Recurring Bibliography

The latest in the series of bibliographies published in specialized biomedical fields from copy periodically produced through NLM's MEDLARS is the Index Investigative Dermatopathology and Dermatology, published monthly by the Universities Associated for Research and Education in Pathology, Inc. For further information write to the UAREP, 9650 Rockville Pike, Bethesda, Maryland 20014.